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PRODUCTION

Editor's Comments

Ray McVicar, Crop Development Branch (ray.mcvicar@gov.sk.ca)

Harvest is moving ahead across the province, with most progress having been made in the southwest. The Saskatchewan Ministry of Agriculture's *Weekly Crop Report* will provide you with more details on harvest progress throughout the province. It can be found at: www.agriculture.gov.sk.ca/Crop-Report

Desiccation of some crops has been an issue this fall, with shortages of product available for the job. See the article on *Pulse Crop Desiccation* in this issue of the CPN for an update.

If you are applying a crop protection product, please REMEMBER TO FOLLOW THE PRE-HARVEST INTERVAL GUIDELINES. Refer to the product label or the product information in the *2008 Guide to Crop Protection* for more information on specific pre-harvest intervals.

Crop pest surveys are an important part of the work done by growers and agronomists each year. The surveys give us a heads-up on when to expect the pest in the field and are a good way to help predict the potential importance of infestations. This edition of the CPN includes a round-up of the surveys carried out this growing season in Saskatchewan.

Our next and last edition of the 2008 Crop Production News will be published on September 26th. Watch for the notice in your email inbox.

NOTE: Throughout this document, you will see that some publications are in blue font and underlined, indicating links to website information. If you are reading this off your computer screen, press the CTRL button and click your cursor on the link to take you directly to the website. ☺

Crop Production News is a biweekly publication prepared primarily by provincial specialists with the Crop Development Branch of the Saskatchewan Ministry of Agriculture. The newsletter includes a compilation of articles related to entomology, plant pathology, weed science, soils and agronomy issues.

Please do not use any of these articles for any other purpose without first asking the author's permission.

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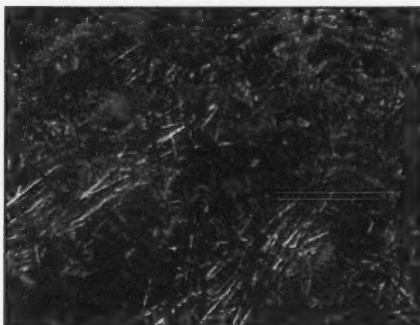
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Crop Protection Lab Update

By Grant Holzgang, Supervisor, Crop Protection Laboratory

The Fusarium head blight survey material is in the early phase of being processed. From the non-survey barley samples submitted so far, it appears that *Fusarium poae* is the predominant Fusarium species with some *F. sporotrichoides* also noted. Neither of these Fusarium species produces deoxynivalenol vomitoxins, but are capable of producing other less toxic mycotoxins. Other species may be found from survey samples. There have been no samples of wheat submitted for head blight, but survey material reveals that the disease is present and preliminary indicators suggest the highest levels will be on the east side of the province.



Anthocyanin pigment on desi chickpea
Source: Saskatchewan Agriculture

Purpling of wheat stems has been a concern for some growers. This anthocyanin pigmentation (left) can occur in most crops, and is a stress response that may result from a multitude of causes. Some cultivars have a greater likelihood of developing the purpling and some may produce the pigmentation under normal conditions. In cultivars of cereals naturally producing the pigment, it is usually seen where the blade meets the stem and nodes, and at the base of the stem.

Pea pods submitted with mycelia growth on them had oospores present indicating downy mildew (*Peronospora sp.*). Although seeds become

infected, seeds are not considered to be an inoculum source as they are not viable and die. Downy mildew oospores, though, may survive for more than 10 years and provide a source of inoculum if wet conditions occur. ⚙



For information about submitting samples to Saskatchewan Agriculture's Crop Protection Lab, go to www.agriculture.gov.sk.ca/ (Programs & Services > Crop Protection Lab Services); Or phone (306) 787-8130.

Identification and Control of Narrow-leaved Hawk's-beard

By Elaine Moats, Crop Development Specialist

At first glance, narrow-leaved hawk's-beard can be confused with sow thistle when flowering (Figure 1). It's normally associated with forage crops, pastures, roadsides or waste areas, but occasionally shows up in cultivated fields. It can behave as an annual or winter annual. The winter annual growth habit can create problems for minimum tillage operations if it goes unnoticed.

Narrow-leaved hawk's-beard (*Crepis tectorum*) is a member of the sunflower family. The seedling stage can easily be confused with dandelions. The defining feature is that the first true leaves have a few distinct, downward-pointing teeth on the leaf margins. Narrow-leaved hawk's-beard forms a basal rosette in late summer or fall. Being able to identify this fall stage is critical to the control of the plant in minimum tillage operations. The rosette leaves are narrow, with variable margins ranging from numerous backward-pointing teeth to deeply lobed segments.

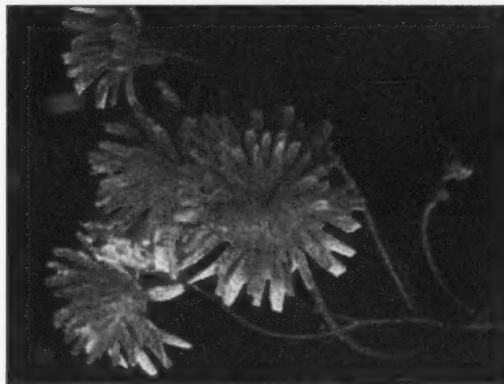


Figure 2: Narrow-leaved hawk's-beard flowers
Source: Linda Hall, University of Alberta



Figure 1: Narrow-leaved hawk's-beard
Source: Linda Hall, University of Alberta

Once the stem bolts, the leaves are alternate, long and narrow (less than a centimetre wide), and clasp the stems. Often the leaf margins roll under toward the midrib.

Flowering begins about mid-June and continues throughout the summer. The flowers have bright yellow dandelion-like heads, usually in clusters of five at the top of branched stalks (Figure 2). At the base of the flower heads are short green bracts that previously contained the flower petals in a blockish bud.

(Continued on page 4)

Identification and Control of Narrow-leaved hawk's-beard (Continued from page 3)

Narrow-leaved hawk's-beard relies completely on seed for reproduction. The seed is wind-borne on a silky papus or seed hair, and able to travel long distances. The seed is very short-lived in the soil, lasting for only one to three years. For hay fields, early mowing to prevent seed production is an option.

In annual crop land, control of narrow-leaved hawk's-beard is easiest if it starts in late fall. Research from the Agriculture and Agri-Food Canada Research Station at Scott, Saskatchewan, and at the University of Saskatchewan have shown that control using fall 2,4-D application to be variable. Sometimes control is adequate at 0.38 litres per acre (600 g/l) and at other times 0.57 litres per acre is inadequate. These rates of 2,4-D also leave too much residue to plant lentil or chickpea the following spring, but canola, flax and pea crops should not be affected. Observations by researchers at the University of Saskatchewan found that narrow-leaved hawk's-beard treated in the fall with 2,4-D was less susceptible to a spring glyphosate application at 180 grams (acid equivalent) per acre, resulting in poor suppression, whereas glyphosate without fall 2,4-D provided good control. Spring 2,4-D application is also variable, but spring applications of glyphosate at 180 grams (acid equivalent) per acre are quite effective if made early. Once the stem bolts, 360 grams (acid equivalent) per acre of glyphosate is needed. Other options in the spring include Express plus 180 grams (acid equivalent) per acre glyphosate or Prepass prior to planting cereals. Observations of research being conducted this year at the University of Saskatchewan suggest that, in addition to the treatments above, Amitrol 240 at pre-seed rates will also provide very good control of narrow-leaved hawk's-beard. Check the product labels for more information on rates and staging. ☼

Saskatchewan Agriculture's Pest Surveys

By Sean Miller, Crop Development Branch

Saskatchewan Agriculture's pest surveys are an important component of an integrated pest management plan. The pest surveys provide producers with an advance notice of potential pest problems for the current crop year. Saskatchewan Agriculture conducts a variety of pest surveys to monitor the change in distribution and population of economic pests in Saskatchewan. The survey data is used to generate forecast maps which warn producers of potential pest problems and enable them to take the necessary monitoring, preventative or control measures.

The **Provincial Pest Survey Committee** reviews the impending pest surveys, proposed improvements to sample collection, and options to make the data useful and timely. The committee consists of representatives from Saskatchewan Agriculture, Agriculture and

(Continued on page 5)

Saskatchewan Agriculture's Pest Survey (Continued from page 4)

Agri-Food Canada, the canola industry and the Saskatchewan Crop Insurance Corporation. The Saskatchewan Crop Insurance Corporation provides funding and staff for conducting some of the provincial pest surveys.

2008 Insect Surveys

Saskatchewan Agriculture's insect surveys serve a number of purposes, including:

- Warning producers of potential problems in a region;
- Determining if an economically harmful pest is present in a region;
- Tracking pests' expansion into new areas;
- Assisting the Canadian Food Inspection Agency in determining the presence of specific insect species;
- Assisting in research projects, including insect models; and
- Providing supply-needs information to crop protection product distributors.

In 2008, the *Bertha Armyworm Monitoring Program* consisted of approximately 150 co-operators reporting moth counts from 170 sites. The co-operators collect and report weekly male moth counts from a pheromone-based trapping system (Figure 1). The reports are used to produce a weekly risk map based on cumulative moth counts. The final 2008 Bertha armyworm map can be viewed at: www.agriculture.gov.sk.ca. Follow the links to Production/Crops-Insects.



Figure 1: Bertha armyworm trap.
Source: Saskatchewan Agriculture

The *Grasshopper Survey* is conducted by Saskatchewan Crop Insurance adjusters. The information collected reflects the number of adult grasshoppers potentially capable of reproduction and egg laying. The data provides an estimate of eggs that can over-winter and present a potential risk to crops when they hatch in the spring of 2009.

The *Diamondback Moth Monitoring System* is co-ordinated by Agriculture and Agri-Food Canada, and co-operators throughout the province conduct the monitoring. The purpose of the survey is to detect the arrival of this migrating pest.

The *Cabbage Seedpod Weevil Survey* was conducted in the southwest, south-central and northwest regions of the province to determine population levels and distribution. The cabbage seedpod weevil continues to expand out of southwest Saskatchewan.

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Saskatchewan Agriculture's Pest Survey (Continued from page 5)

The *Pea Leaf Weevil Survey* is conducted on a small scale by Saskatchewan Agriculture staff in the southwest to monitor the pest's spread into Saskatchewan.

The annual *Wheat Midge Survey* will be conducted in the fall. Most agricultural areas of the province will be covered, except the extreme southwest.

Results: The 2008 insect survey results will be made available to producers during Crop Production Week in January and will also be posted on the Saskatchewan Agriculture website at www.agriculture.gov.sk.ca. Follow the links to Production/Crops-Insects.

2008 Plant Disease Surveys

The *Fusarium Head Blight Survey* monitors the severity and spread of *Fusarium* head blight within the province, and determines the *Fusarium* species responsible for infection. The information collected from the survey is used to provide disease control recommendations for producers. Saskatchewan Crop Insurance adjusters collect 50 heads per field from 10 fields within their regions, when the crop is in the early milk to early dough stages. The samples are sent to the Crop Protection Laboratory for species identification and a disease severity rating.

The *Wheat and Barley Leaf Disease Survey* determines the prevalence and distribution of wheat and barley leaf diseases within the province. The survey also identifies the most prominent pathogens in each region. The leaf disease survey is conducted by Saskatchewan Crop Insurance adjusters at the same time as the *Fusarium* survey. Samples of 30 to 40 flag leaves are collected from 10 fields in each of the participating districts and are sent to laboratories for disease identification and rating.

The *Canola Disease Survey* was conducted in mid-August by volunteer pathologists, agronomists and Saskatchewan Agriculture staff. All disease incidences are determined on the basis of field inspections (Figure 2).

The *Ascochyta on chickpeas – Sentinel Plant Project* was designed to develop an early warning system for *ascochyta* of chickpea to aid in timing the first fungicide application. The objective is to determine the first release of *Ascochyta rabiei* spores by placing pre-grown susceptible chickpea plants near inoculum sources in chickpea residue. These sentinel plants are then returned to the lab to promote symptom development and determine disease risk. In 2008, *ascochyta* symptoms were first identified on plants placed in the fields from May 9 to 13.

Results: 2008 survey results will be available to growers, and will be posted in March 2009 on the Canadian Plant Disease Survey website at: www.cps-scp.ca/cpds.htm. ⚙

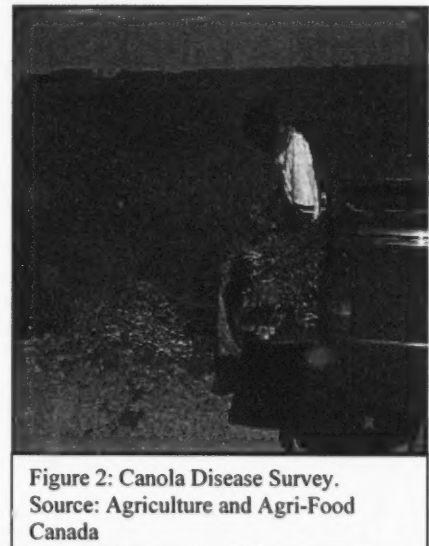


Figure 2: Canola Disease Survey.
Source: Agriculture and Agri-Food
Canada

Fall is a good time to soil test

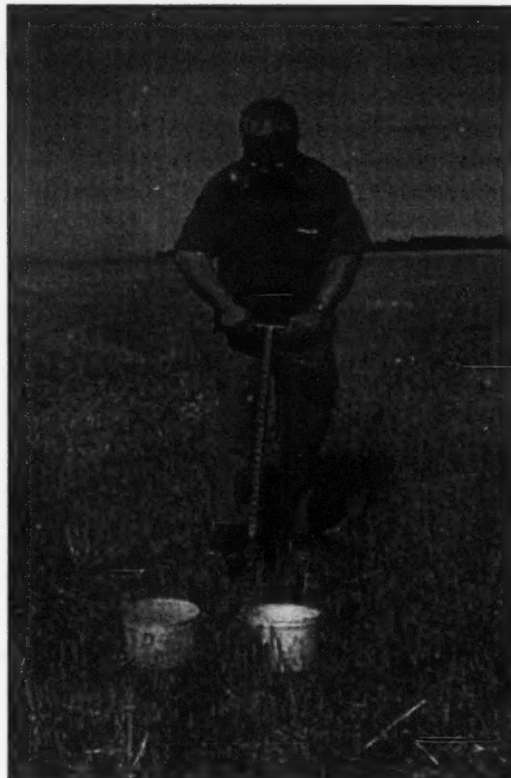
By Ken Panchuk, Provincial Specialist, Soils

Ideally, the soil temperature needs to cool off to below 10°C before starting your fall soil testing program. This corresponds to about the first week of October in most years. The main reason for waiting is to minimize the risk of nitrogen mineralization before freeze-up.

Earlier fall tests are valuable too, and are used to determine nutrient requirement information for fall-seeded crops.

Soil testing on a regular basis establishes crop nutrient needs, monitors changes in nutrient levels over time and guides in nutrient management planning.

Fall soil testing should also be used to help make the decision whether or not to purchase crop nutrients early, as it is difficult to predict where fertilizer prices are going to go. ⚙



Fall Soil Testing
Source: Saskatchewan Agriculture

Do you have more questions about crops, livestock, nutrient management or farm business management?

... Contact our friendly and knowledgeable staff at the
Agriculture Knowledge Centre
Toll-free helpline 1-866-457-2377



Or, check on-line at: www.agriculture.gov.sk.ca

Pulse Crop Desiccation

By Dale Risula, Provincial Specialist, Specialty Crops

The recent hot, sunny weather in much of Saskatchewan has sped maturity of this year's pulse crop. However, there is still a need to cut off the indeterminate growth of some plants, particularly plants in low lying areas, to allow a uniform harvest. Many producers choose to use a herbicide as a harvest aid in their pulse crops. With only two product choices available, a shortage of one can make the situation more difficult.

Producers often categorize these pre-harvest products as desiccants, but the only product that is a true desiccant is Reglone Desiccant. Reglone Desiccant is in herbicide group 22, and it works on plant membranes immediately upon contact. Glyphosate, in comparison, is translocated through the plant before killing it, resulting in a slower dry down.

The speed at which these products work varies considerably. Reglone Desiccant will cause the crop to be dry in the shortest time period: usually three to eight days. Glyphosate products will take the longest time: usually seven to 21 days, depending on weather conditions. These differences are the key to deciding which product to use, depending on environmental conditions.

Crop protection companies estimate product supply needs each year. Desiccant supply shortages can occur if their predictions for harvest conditions were incorrect. The Reglone Desiccant shortage this year is a result of a number of factors.

The Grower Requested Own Use (GROU) program provides the opportunity for Canadian producers to import listed products from the United States. Reglone Desiccant is one of the products on GROU list. Before applying for an import permit under the GROU program, producers should first ensure that product is available in the United States. Certain fees may also be required, such as the container disposal fee. For more information on this program, visit the Pest Management Regulatory Agency web page at www.pmr-arla.gc.ca/english/appregis/grou/grou_imp-e.html

The alternative to using an herbicide as a pre-harvest treatment is to swath the crop. Swathing stops plant growth, causing the crop to mature. However, swathing can have disadvantages, especially when inclement weather follows the swathing operation, and quality may drop as the crop lies in the swath. Conversely, if weather conditions are optimal, the quality of some swathed pulses might actually improve. Whether to swath or to straight-cut a crop is a personal preference.

Using a pre-harvest herbicide may provide a lower-risk solution to obtaining a uniformly dried crop and maintaining good quality. Comparing the cost of applying pre-harvest herbicides versus swathing can be done before choosing between these two options. These costs vary, depending on choice of chemical, machine costs and other farm operations. You can calculate your costs by using some helpful guides, such as Saskatchewan Agriculture's Crop Planning Guides.

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Pulse Crop Desiccation (Continued from page 8)

The table below includes the pre-harvest herbicide treatments that are registered for use on pulse crops. This information is also available in Saskatchewan Agriculture's Guide to Crop Protection. ☼

Registered Pre-harvest Treatments for Pulse Crops	
Reglone Desiccant (240 g/l liquid; PCP Reg. No. 26396) Cost (spring 2008 suggested retail price): \$26.84 per l plus surfactant. Dry bean, soybean Timing: Crop has lost 80 to 90 per cent of leaves and 80 per cent of pods are yellow.	Glyphosate *** (refer to specific glyphosate labels and formulations; see Nufarm; Cheminova; IPCO; Dow AgroSciences; Monsanto; Syngenta) Cost: (spring 2008 suggested retail price): \$7.30 - \$11.19 per l equivalent. Dry bean, soybean Timing: <u>Dry Bean:</u> Stems green to brown in colour and pods are mature (yellow to brown) and 80 to 90 per cent of original leaves have dropped. <u>Soybean:</u> stems are green to brown in colour and pod tissue is brown and dry in appearance (80 to 90 per cent leaf drop).
Chickpea* Timing: Plants yellow, pods mature, seeds changed colour and detached from pods.	Chickpea** Timing: Stems are green to brown in colour; pods are mature (yellow to brown in colour).
Lentil Timing: Lowest pods are light brown and rattle when shaken.	Lentil Timing: Lowest pods (bottom 15 per cent) are brown and rattle when shaken.
Pea Timing: Lowest pods are ripe and dry, seeds detached from pods.	Pea Timing: Majority (75 to 80 per cent) of pods are brown.
<p>* Aerial applications to chickpea – 0.7 l per acre only (Reglone Desiccant). ** Not all glyphosate products are registered for pre-harvest application on chickpea. Refer to individual crop labels for a list of registered uses and crop species. *** Not for crops grown for planting seed</p>	

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Canola Diseases in 2008

By Faye Dokken, Provincial Specialist, Plant Disease and
Venkata Vakulabharanam, Provincial Specialist, Oilseeds

A recent crop report estimated 7.28 million acres of canola have been seeded in Saskatchewan this year. Most crops in the province are one to two weeks behind schedule, and canola swathing had barely begun by the second week of August. Symptoms of some canola diseases may become more pronounced at swathing and harvest time. Even if it is too late to do anything about it this year, it is important to monitor crops for diseases in case you need to adjust your management strategies for next time. One of the best moves you can make to combat plant disease is planning your crop rotation wisely.

Sclerotinia

A thick crop canopy not only promises valuable yield potential, it also provides ideally humid conditions for disease development of Sclerotinia. Premature ripening of infected canola results in erect, straw-coloured plants adjacent to healthy green plants, which may lodge under the weight of filling pods. Infected plant parts become bleached, brittle and hollow, often containing hard black Sclerotia (resting bodies).

Next Time: When planning your crop rotation, remember that Sclerotinia can infect a variety of crops, including canola, flax, lentil, chickpea and pea. Scout for Sclerotia in the soil and note favourable moisture (wet or humid weather, soil at or near field capacity) and temperature (15-20 °C) conditions from mid-June to September when apothecia are being produced. Fungicide applications should coincide with 20 to 30 per cent bloom stage in order to protect as many canola petals as possible before they begin to drop. The following fungicides are registered for control of Sclerotinia in canola: Lance, Proline, Quadris, Ronilan EG and Rovral Flo.

Alternaria Pod Spot

Species of Alternaria commonly cause grey to black spots on canola leaves, stems and pods. The disease severity may range from trace lesions to severe pod infections, resulting in direct yield loss, seed shrinkage, premature ripening, pod splitting and infection of developing seeds. Crops should be swathed when there is an average of 60 per cent seed colour change on the main stem and combined as soon as they are ripe to reduce saprophytic growth of Alternaria in the swath.

Next Time: Rotations should be managed in affected and nearby fields to reduce air-borne inoculum. Use thoroughly cleaned, disease-free seed with good germination. The seed treatments for control of seed-borne Alternaria include: Foundation Lite, Gaucho CS FL, Helix, Helix XTra, Prosper FL and Vitavax rs Fungicide. Foliar fungicides may be used to control or suppress the disease when applied from the late-flowering to early pod stages. The following fungicides are registered for control of Alternaria black spot in canola: Lance, Quadris and Rovral Flo.

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Canola Diseases in 2008

(Continued from page 10)

Aster Yellows

Aster yellows are transmitted by the six-spotted leafhopper. Trace levels of aster yellows are likely to appear in canola fields at the end of the season, but leafhopper populations, temperature and moisture will influence disease severity from year to year. Symptoms include reduced internode growth (stunting), erect plants taller than the rest of the canopy, proliferation of shoot or roots (witches' broom), purpling of leaves and flowering parts (similar to sulphur deficiency or other stress), etiolation (yellow, long internodes, small leaves), virescence (greening of flowers), distorted and sterile inflorescences, phyllody (leaf-like petals, sepals and pods), and replacement of pods with blue/green, hollow, bladder-like structures.

Next Time: Early seeding of crops and control of susceptible weeds may reduce aster yellows in canola. Remember, abundant rainfall will make plants more succulent and attractive to leafhoppers, but rain and cooler temperatures will also temporarily stop their migration. Insecticides containing dimethoate (i.e. Cygon, Lagon) are registered for leafhopper control in canola.

Blackleg

Hail damage in canola growing areas may result in a slight increase of blackleg this year. Physical damage caused by hail can predispose canola to blackleg, resulting in physical shredding combined with lesion or canker formation and development of pycnidia.

Next Time: Most canola varieties are resistant to blackleg, but this disease is genetically diverse and can quickly overcome resistance, therefore a diverse crop rotation is important. Fungicides containing propiconazole (i.e. Tilt, Bumper, Pivot) are registered for use against blackleg on canola.

Fusarium Wilt

Fusarium wilt plugs the vascular system and limits water and nutrients from flowing up the stem. Signs of Fusarium wilt are indistinct, with only scattered plants in the field showing symptoms, including: foliar discolouration, plant stunting, wilting, and discolouration of stems, branches, and pods. Yellow or reddish-brown streaks are often found only along one side of the plant, and the stem base may turn orange. Pods may be smaller than normal and contain no seed, and severely diseased plants may die prematurely.

Next Time: Use canola varieties with resistance to Fusarium wilt, and use crop rotations to reduce inoculum levels.

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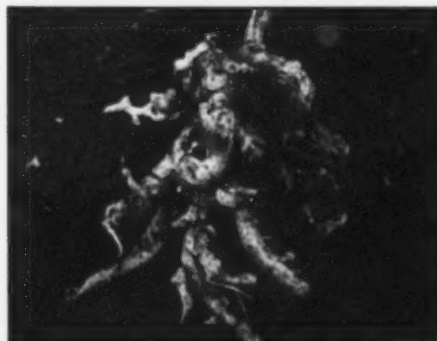


Figure 1 Canola Roots Infected with Clubroot
Source: Saskatchewan Agriculture

Canola Diseases in 2008
(Continued from page 11)

Clubroot

Clubroot of canola has not been found in Saskatchewan. It was first reported in 2003 around the Edmonton area. Clubroot spreads by resting spores in the soil or in canola plant material containing galls (Figure 1). Resting spores can survive in soil for up to 20 years.

Greater risk of spreading this disease from field to field lies with soil transportation by field equipment. In Alberta, their *Agricultural Pest Act* gives municipalities the power to enforce a five-year rotation during which canola cannot be grown in fields infected with clubroot.



Figure 2: Premature Ripening of Canola
Source: Saskatchewan Agriculture

Saskatchewan canola growers should be attentive this fall while harvesting. Watch out for poorly performing patches in your canola fields. If any of the areas seem to be ripening prematurely, and if there is no other logical explanation for the poor performance, take time to get off of the combine or swather and pull up a few plants in that area. Clubroot symptoms are not visible on above-ground plant parts. Diagnosis can only be done by pulling plants from the ground and visually inspecting roots. Crop specialists recently visited infected fields in the Edmonton area and took photos of the

infected field patches (Figure 2). It was also evident in those infected fields that the absence of visual symptoms does not guarantee the absence of clubroot in canola fields. If you are not sure, collect canola root samples with below ground parts intact and contact the Crop Protection Laboratory for visual diagnosis or a qualified seed testing laboratory for DNA testing.

At this time, the only measures to control this disease are early detection, prevention of spread and rotation.

The 2008 Canola Disease Survey is currently underway. Survey participants will be assessing the health of a representative sampling of canola fields across the province. This information will be published in the Canadian Plant Disease Survey in 2009.

Have a great harvest! ☼

The *Crop Production News* is a regular publication of the
Crop Development Branch, Saskatchewan Ministry of Agriculture.
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e-mail ray.mcvicar@gov.sk.ca